

3189-01

What is claimed is:

- 5     1.    A grease composition comprising the reaction product of:
  - (a)   a stable dispersion of a metal hydroxide with a number average particle size in the range about 20 nanometres to about 2 micrometres;
  - (b)   a surfactant with a HLB of less than about 10;
  - (c)   a carboxylic acid containing about 2 to about 30 carbon atoms,  
10   wherein the carboxylic acid is selected from a monocarboxylic acid, polycarboxylic acid and mixtures thereof, optionally the carboxylic acid is further substituted with groups selected from a hydroxyl group, an ester and mixtures thereof; and
  - (d)   an oil of lubricating viscosity.
- 15     2.    The composition of claim 1, wherein the amount of a stable dispersion of metal hydroxide is present in the range about 0.5 to about 20 weight percent, the amount of carboxylic acid is present in the range about 0.1 to about 30 weight percent and the amount of oil of lubricating viscosity is present in the range  
20   about 50 to about 96.5 weight percent.
3.    The composition of claim 2, wherein the metal of the metal hydroxide is present in the range about 2 to about 16 weight percent.
- 25     4.    The composition of claim 1, wherein the metal hydroxide is substantially anhydrous.
5.    The composition of claim 1, wherein the metal of the metal hydroxide is an alkali metal, an alkaline earth metal, aluminum or a mixture thereof.
- 30     6.    The metal hydroxide of claim 3, wherein the metal of the metal hydroxide is an alkali metal or a mixture thereof.

7. The composition of claim 1, wherein the carboxylic acid contains about 2 to about 30 carbon atoms, wherein the carboxylic acid is selected from a monocarboxylic acid, dicarboxylic acid and mixtures thereof, optionally the carboxylic acid is further substituted with groups selected from a hydroxyl group, an ester formed by the reaction of said carboxylic acid with an alcohol of 1 to about 5 carbon atoms; and mixtures thereof.
8. The carboxylic acid of claim 7, wherein the carboxylic acid is selected from the group consisting of a substituted or unsubstituted stearic acid.
9. The carboxylic acid of claim 7, wherein the carboxylic acid is a mixture of at least one monocarboxylic acid with nonanedioic acid, decanedioic acid or mixtures thereof.
10. The grease composition of claim 1 further comprising at least one compound selected from the group consisting of an antiwear agent, an antioxidant, a metal deactivator, a rust inhibitor, a viscosity modifier and an extreme pressure additive.
11. A method of producing a grease composition comprising mixing in any order:
- (a) a stable dispersion of metal hydroxide present in the range about 0.5 to about 20 weight percent prepared by removing the solvent from an emulsion of metal hydroxide and solvent in oil;
  - (b) a carboxylic acid containing about 2 to about 30 carbon atoms, wherein the carboxylic acid is selected from a monocarboxylic acid, polycarboxylic acid and mixtures thereof, optionally the carboxylic acid is further substituted with groups selected from a hydroxyl group, an ester and mixtures thereof present in the range about 0.1 to about 30 weight percent,

(c) an oil of lubricating viscosity present in the range about 50 to about 96.5 weight percent to obtain a mixture, said mixture is further treated with a saponification stage; and

5 (d) optionally a finishing amount of oil of lubricating viscosity is added to impart the desired viscosity.

12. The process of claim 11, wherein the solvent content of said dispersion of metal hydroxide is about 0.1 to about 20 weight percent based on the weight of metal hydroxide.

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13. The process of claim 11, wherein the reaction time is reduced by about 20 to about 90 percent as compared to a control using a powdered form of said metal hydroxide.

15 14. The process of claim 11, wherein the reaction temperature is in the range of about 80 to about 215°C.

15. The process of claim 11, wherein the amount of foam produced is reduced by about 2 to about 100 percent as compared to a control using a powdered form of said metal hydroxide.

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16. The process of claim 11, wherein the grease composition is prepared by a non-batch process.

25 17. The process of claim 11, wherein the grease yield value is increased per gram of metal hydroxide and gram of carboxylic acid containing about 2 to about 30 carbon atoms for any NLGI grade 1-6 such that at least about 8 percent by weight less of said metal hydroxide and at least about 8 percent by weight less carboxylic acid is needed to achieve an equivalent yield value as compared to a control of the same grade prepared from the same chemical using a powdered form of said metal hydroxide.

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18. A process to prepare a solid grease thickener comprising the reaction product of:

a) a stable dispersion of a metal hydroxide with a number average particle size in the range about 20 nanometres to about 2 micrometres;

5        b) a surfactant with a HLB of less than about 10;

c) a carboxylic acid containing about 2 to about 30 carbon atoms, wherein the carboxylic acid is selected from a monocarboxylic acid, polycarboxylic acid and mixtures thereof, optionally the carboxylic acid is further substituted with groups selected from a hydroxyl group, an ester and mixtures thereof; and  
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d) a solvent.

19. The process of claim 18, wherein the solvent is exchanged with an oil of lubricating viscosity after the formation of a solid thickener and the solvent is  
15 removed by evaporation, filtration or mixtures thereof.

20. The process of claim 18, wherein the solvent is selected from the group consisting of distilled water, water, acetone, and lower alcohols, lower alcohols  
20 containing 1 to about 5 carbon atoms and mixtures thereof.